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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,589

07/07/2005

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EXAMINER

HAUTH, GALEN H

ART UNIT

PAPER NUMBER

1791

NOTIFICATION DATE

DELIVERY MODE

02/11/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
pto@gbpatent.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/541,589	<b>Applicant(s)</b> TOGOU ET AL.	
	<b>Examiner</b> GALEN HAUTH	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

1. Acknowledgment is made to applicant's amendment of claims 2-4. No new matter has been added, and the rejection of claims 2-4 under 112 is withdrawn.

Acknowledgment is made to the addition of claims 7-9.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (PN 5460818) in view of Tanaka (PN 4438058) and Taub et al. (PN 3900433).

- a. With regards to claim 1, Park teaches a method for forming expandable blends of styrene, olefin, and blowing agent (abstract) for expandable beads (col 12 ln 1-2). Park does not teach adding a surfactant to the beads.

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b. Tanaka teaches applying a surfactant to expandable styrene beads to prevent blocking, add an antistatic effect to the product, and save on steam used to expand the beads (abstract). Tanaka teaches using the surfactant in 0.5-10 percent by weight of beads (col 3 ln 13-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a surfactant as taught by Tanaka in the expandable styrene-olefin bead taught by Park, because Tanaka teaches that doing so will prevent blocking, add an antistatic effect to the product, and save on steam used to expand the beads (abstract of Tanaka). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the surfactant in 0.5-2.0 parts by weight of the bead, because Tanaka teaches using 2% by weight in Example 1 (col 3 ln 31 of Tanaka). One in the art would have applied from within an amount which is disclosed to be suitable for its intended purpose by the prior art reference. Tanaka does not teach a temperature or pressure at which the surfactant is added to the beads.

c. Taub teaches a method for forming polystyrene expandable beads impregnated with blowing agent and an impregnation aid (abstract) in which the styrene beads are contacted with the blowing agent in liquid suspension at atmospheric pressure (0.101 MPa) and 20 to 35 degrees Celsius (col 4 ln 5-16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare the expandable beads of the composition of Park with the surfactant taught by Tanaka present in the aqueous impregnation

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solution of Taub at atmospheric pressure and 20 to 35 degrees Celsius, because doing so allows the beads to be impregnated with the blowing agent (expanding agent) and the surfactant at a temperature below the activation temperature of the blowing agent in a single mixing step (in that the surfactant would have to be mixed in later in an additional mixing step were it not included with the blowing agent). It would have been obvious to one of ordinary skill in the art at the time the invention was made to impregnate the beads at a temperature of 20 to 30 degrees Celsius as Taub teaches mixing at 25 degrees Celsius (col 4 ln 30) which is within the range and the operating temperature is taken to be a result effective variable, routinely optimize by those versed in the art.

d. With regards to claim 2, in the process described above Park in view of Tanaka and Taub impregnates the styrene beads with surfactant in an aqueous medium (col 4 ln 9 of Taub).

e. With regards to claim 3, Tanaka teaches using a cationic surfactant (col 2 ln 58).

f. With regards to claim 4, in the process described in the rejection of claim 1 above the surfactant is in liquid suspension at 20 to 30 degrees Celsius.

g. With regards to claim 7, Tanaka teaches that the surfactant is stearyl-methyl-ammoniumchloride (col 3 ln 63, stearyl groups contain 18 carbons).

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (PN 5460818) in view of Tanaka (PN 4438058) and Taub et al. (PN 3900433) as applied to claim 1 above, and further in view of Henn et al. (PN 5563178).

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- a. With regards to claim 5, Park in view of Tanaka and Taub teach a method for forming an expandable styrene modified olefin-based resin bead obtained by the method of claim 1 as described above in the rejection of claim 1. Taub teaches subjecting the bead to steam at 95 degrees Celsius (.085 MPa) in order to pre-puff (pre-expand) the bead using butane or pentane as the blowing agent (col 2 ln 15). Taub does not teach that the steam is at a gauge pressure of .01-.10 MPa.
- b. Henn teaches a method for expanding a styrene bead with pentane as the blowing agent (col 5 ln 24-36) in which the bead is subjected to a prefoaming (pre-expansion) by subjecting it to steam at 120 degrees Celsius (col 5 ln 51-52, 120 degree steam is at 0.0972 MPa gauge). It would have been obvious to one of ordinary skill in the art at the time the invention was made to subject the expandable beads of Park in view of Tanaka and Taub to pre-expansion by steam at .0972 MPa gauge, as such is an art recognized technique for pre-expansion of expandable styrene containing beads for the purposes of storage or pre-foaming (col 4 ln 21-28 of Henn).
- c. With regards to claim 6, Park in view of Tanaka and Taub and further in view of Henn as applied to claim 5 above provides a pre-expanded styrene modified olefin based resin bead produced by the method of claim 5. Henn teaches that the pre-expanded styrene beads are then further molded by passing steam over them at a temperature of 107 to 130 degrees Celsius (col 6 ln 1-8, 107-130 Celsius steam is at a pressure range of 0.0281 – 0.1687 MPa gauge). It

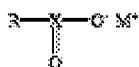
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would have been obvious to one of ordinary skill in the art at the time the invention was made to expand the pre-expanded beads of Park in view of Tanaka and Taub and further in view of Henn using steam at 0.05 to 0.15 MPa gauge as the steam pressure is a result effective variable that can be changed to affect the rate at which the pre-expanded styrene beads fully expand.

6. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (PN 5460818) in view of Tanaka (PN 4438058) and Taub et al. (PN 3900433) as applied to claim 1 above, and further in view of Bass et al. (PN 6057376).

a. With regards to claim 8, Park in view of Tanaka and Taub, as applied to claim 1 above, teach a method for forming expandable styrene modified beads with a surfactant, but do not teach the general formula for the surfactant found in claim 8.

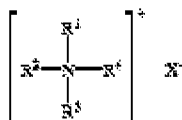
b. Bass teaches a surfactant of an anionic sulfonated component as seen below, in which the X is a double bonded sulfur and oxygen with the R group as an oil soluble hydrocarbon (col 5 ln 10-15)



where R is an oil soluble hydrocarbon,  
X is a carbon or S=O, and

c.

d. And another component as seen below that is an alkyl ammonium salt wherein one of the R groups has at least 14-20 carbons (col 6 ln 27-45).



e.

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f. Bass teaches that the surfactant is used for preparation of styrene foam (col 3 ln 14-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the two part surfactant of Bass in the process of Park in view of Tanaka and Taub, as Tanaka teaches that other surfactants may be used (col 2 ln 60-61) and the surfactant of Bass is used for preparing styrene foams (col 3 ln 14-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a C<sub>2</sub>H<sub>5</sub> group for the R group of the sulfonated component as such is an oil soluble hydrocarbon and one of ordinary skill in the art would use different carbon lengths in an optimization of the component including two carbons.

***Claim Rejections - 35 USC § 112***

7. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the limiting of the R<sub>1</sub> group in the chemical structure.

***Response to Arguments***

8. Applicant's arguments filed 11/21/2008 have been fully considered but they are not persuasive.



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- a. With regards to applicant's argument that Tanaka fails to teach the use of a polymer other than styrene is not persuasive as Tanaka teaches the use of resins other than styrene (col 3 ln 24-26).
- b. With regards to applicant's argument that the claimed amount of surfactant is not determined in the rejection is not persuasive, as the rejection states that It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the surfactant in 0.5-2.0 parts by weight of the bead, because Tanaka teaches using 2% by weight in Example 1 (col 3 ln 31 of Tanaka).
- c. With regards to applicant's argument that Taub is not valid for a basis for temperature and pressure ranges is not found persuasive, as Taub provides temperature and pressure ranges for forming polystyrene expandable beads as is the same method of Park (col 12 ln 1-2). One of ordinary skill in the art at the time the invention was made would have known to use operating variables of a similar process with similar materials.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GALEN HAUTH whose telephone number is (571)270-5516. The examiner can normally be reached on Monday to Thursday 8:30am-5:00pm ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571)272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GHH/

/Christina Johnson/  
Supervisory Patent Examiner, Art Unit 1791